

scottish intensive care society



annual report 2008-2009

editorial

Welcome to the Scottish Intensive Care Society Annual Report for 2009.

The society continues to progress from year to year, thanks to the productive activities of its members and council. After the revision of its constitution in 2009, a number of new regional representatives were elected onto council. The current council has actively been increasing the areas in which the Society has a role and influence and the torch is being passed to a new generation of Intensive Care consultants and trainees who have taken on the challenge to continue the good work.

There are more elections this year, and the length of terms of office of all the council members and office bearers is detailed at the end of this report.

The Society was founded in order to run the annual scientific meeting, and in 2009

the meeting was so popular it had to be moved to a new venue to cope with the increasing numbers. The venue chosen was the Westerwood Hotel in Cumbernauld and in the event over 250 delegates and 60 trade representatives attended. This meeting provided the society with the opportunity to hear invited international speakers from Ottawa, Canada, and Maine, USA, in addition to our own local experts and speakers from the UK including those from St Thomas' and the Hammersmith Hospitals in London.

I would like to take this opportunity to thank the members of Council, and the Society who have contributed to this report, and wish the Society every success for 2010.

Charlotte Gilhooly

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president's report



The Scottish Intensive Care Society (SICS) has had a busy but successful year, as is evident from the articles within this report.

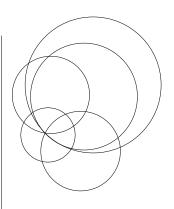
At the time of writing it looks as if pandemic HINI flu is reducing, but I am pleased that the Chief Medical Officer, Dr Harry Burns, has agreed to talk to the Annual Scientific meeting. Planning for the possibility of a huge surge has taken a great deal of time for many of us, raising practical and ethical issues, which have been approached constructively from all sides. The Scottish Government has recognised the importance of critical care, the Society itself and the Audit group. John Colvin and the Critical Care Delivery Groups have played a major role. Although the numbers actually requiring treatment in ICU have been smaller than anticipated, they have presented challenges clinically and to capacity.A small minority have been extremely difficult to treat, and have been referred for extra corporeal membrane oxygenation (ECMO) with gratifying results, opening a debate on this technique. This coincided with the publication of the CESAR trial and produced a great deal of media interest. I was asked to chair an Expert Group on which SICS was very well represented to advise the Cabinet Secretary on the place of ECMO in adult intensive care and am very grateful to those who made themselves available at short notice. The value of the Evidence Based Medicine. Audit and Transport Groups in supporting this work was clear to all.

The 2010 Annual Scientific Meeting also features our first annual Mike Telfer lecture. Mike, who died in 2007, was the founding president of SICS, a consultant at Glasgow Royal Infirmary, and a former President of the UK Intensive Care Society. His enthusiasm was an inspiration to many, including myself, and I am delighted that we can remember him in this way. A fuller appreciation by John Kinsella is in this issue. Two prominent members departed the Scottish critical care scene in 2009. Ian Grant, another former President of SICS, retired in December 2009. As a consultant first in Dundee then in Edinburgh, Ian was one of those who first organised meetings before the SICS was founded. Brian Cuthbertson moved from Aberdeen to be Chief of Critical Care at Sunnybrook in Toronto. We wish them both well and look forward to seeing them at future meetings.

We do not always appreciate what we have until we hear it from somebody else, but your society continues to lead in many ways across the UK. Consultants in London tell me that they direct their trainees to our on line learning. The influence of the EBM group is evident in JICS (Journal of the Intensive Care Society). The trials group prospers with Tim Walsh also leading in the UK, whilst Peter Andrews and team are to be congratulated on successfully completed the MRC (medical research council) funded SIGNET trial on budget and on time.

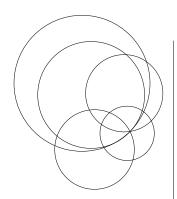
It has been a privilege to lead SICS for the last two years and I am very grateful for the support of council and others, but particularly to Roxanna Bloomfield, Rory Mackenzie and Steve Stott. I wish Steve all the best as our new President from January 2010.

Simon MacKenzie



Simon Mackenzie President, Scottish Intensive Care Society

I



annual scientific meeting

Westerwood Hotel, Cumbernauld, 22nd – 23rd January 2009 Day One

The change of venue for The Society's annual scientific meeting this year to the more spacious precincts of the Westerwood Hotel in Cumbernauld bears testimony to the ever blossoming popularity of the event. An illustrious panel of speakers both from within and outside the UK was complimented by an impressive turnout of delegates.

The first session of the opening day was dedicated to 'Transport and Retrieval', a subject that enjoys perennial importance.

Mike Fried (Lothian) presented the results of the Scottish audit of the inter hospital transfer of the acutely ill. The rarity of adverse events noted during the audit period was a heartening revelation.

Stephen Hearns (Paisley) imparted an enlightening insight into the sterling service provided the Scottish emergency aeromedical system - a service that encompasses not only the retrieval of acutely ill patients from our remote populace but which has also expanded its horizons to incorporate training of the rural emergency care physicians and paramedics thereby nurturing a more holistic approach towards an integrated system of rural emergency care in Scotland.

Shock Team Approach by Mo Al-Haddad (Glasgow) was a brief overview of the evolution of this dedicated critical care service since its conception in the 1970s. The strengths as well as the weaknesses of this approach were enumerated along with the efforts made to remedy the deficiencies.

Ben Shippey (Dunfermline) underlined the importance of organised training for personnel involved in the transfer of the critically ill to ensure a continuum of high quality patient care. He elaborated on the avenues that needed to be explored to evolve a comprehensive curriculum.

It wouldn't be presumptuous to suggest that the discussion on transport and retrieval would have been rendered incomplete without the opportunity to partake of the experience across the Atlantic. Speaking for LifeFlight of Maine, a nonprofit organisation providing a medical helicopter service, Tom Judge (Maine, USA) unravelled the intricacies of a sophisticated but cost effective patient retrieval system that caters to the second most rural state by population density in the United States. His concept of achieving 'proficiency' and not mere 'competency' should motivate us to strive for higher standards of patient care.

The next session "New Evidence on the Horizon" saw Lauralyn McIntyre (Ottawa, Canada) begin by lavishing sincere praise on the 'mild' Scottish winter in contrast to the more inclement cold in her hometown. As part of The Canadian Critical Care Trials Group, a group of Canadian investigators interested in pursuing critical care research, Lauralyn elucidated on the details of some of the projects the group has embarked upon. These include PROTECT (prophylaxis of thromboembolism - low molecular weight vs unfractionated heparin), REDOXS (educing deaths from oxidative stress-effect of glutamine and antioxidant supplementation), OSCILLATE (oscillation for ARDS treated early), PRECISE (fluid resuscitation strategy in early septic shock- 5% albumin vs normal saline), RECOVER (long term outcomes in survivors of prolonged mechanical ventilation and their caregivers) and ABLE (age of blood in the resuscitation of critically ill patients).

Lunch provided the much needed fodder to help rejuvenate for the afternoon session. The hour long break allowed delegates an opportunity to keep abreast of the latest that the industry had on offer. An exhaustive array of exhibitors kept most of us on our toes. The break also saw poster presentations being judged for a prize.

Postprandial somnolence, if any, was effectively mitigated by research presentations vying for the coveted spot. These covered interesting and diverse topics. The winning presentation was scheduled to be announced the following day.

Mid-afternoon coffee break was followed by the concluding session of the day- titled "Heartsink for the Intensivist?". Duncan Wyncoll (St Thomas' Hospital, London) succinctly delved into the management of acute pancreatitis covering among other aspects recent knowledge on contentious issues such as role of prophylactic antibiotics, selective decontamination of the gut, role of immunonutrition and activated protein C.

At a time when healthcare across the UK has been hassled by burgeoning cases of flu, it was pertinent to broach upon this subject. Beginning with a grim reminder that a pandemic is overdue, Steve Brett (Hammersmith Hospital, London) recounted the eventualities that would confront us, should we be faced with such a catastrophe.

This brought the first day of the meeting to a close for some who retreated to the cosy domain of their abode before the dawn of another gruelling day of scientific sojourn. For others, there was excitement galore with the SICS AGM scheduled soon thereafter and to be followed by the Annual Dinner later in the evening.

Satyawan Bhat, Glasgow

Day Two

Those who were feeling a little tired after enjoying the annual dinner were revitalised with two controversial subjects. The first of which Duncan Wyncoll from London who presented the case for activated protein C. It was suggested that there is now better biological plausibility for an effect with protein C and a relevance of targeting protein C deficiency. The limitations of the PROWESS trial were iterated while pointing out that it represents the largest and most robust study in intensive care. He went on to explain that registries have shown no signals to harm if used in accordance within the product licence but violations were associated with complications. Delegates were reassured that Intracerebral haemorrhage rates were similar to baseline and the mild anticoagulant effect reduced the rate of thrombotic stroke leaving a serious adverse event rate of 6%. A healthy discussion ensued and the results of PROWESS-SHOCK are eagerly awaited.

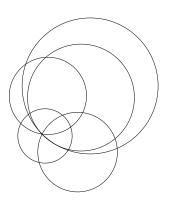
Lauralyn McIntyre of the Canadian Critical Care Trials Group followed on with the next controversy: the rationale for albumin and Hydroxy Ethyl Starch (HES). The case for albumin was well presented with numerous theoretical advantages beyond providing oncotic pressure, such being a free radical scavenger with a suggestion of less microvascular dysfunction following its use. The impact of the Cochrane paper was tempered with the results of the more recent SAFE trial and a look at the subgroups which showed a trend to benefit in sepsis and to harm in traumatic brain injury. Furthermore, the use of albumin to draw fluid may have some evidence behind it after all. The delegates were then reassured of the many albumin trials in the pipeline. The association with 10% HES and acute renal failure was then demonstrated with Brunkhorst's study and a warning that although physiochemical differences exist between pentastarches and the newer tetrastarches there is no clinical data to back up safety claims.

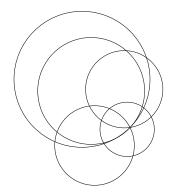
Next the four new Scottish Critical Care Professors showcased their endeavours, the first of whom was John Kinsella of Glasgow, who emphasised reducing error and improving care. He initially described his work on the resilience of those Glaswegians to high risk surgery despite their inability ride for very long on an exercise bike. Then, his attentions shifted to ICU and looking at ways to improve the accuracy, efficiency and speed of information to reach the bedside. An electronic solution was sought with a grant assisted redesign of the ICU environment linking physiological variables, medical devices and interventions. This powerful tool has allowed the development of scoring systems, patient triage, detailed physiological analysis and facilitated a more rapid feedback loop in making changes to clinical practise. These were flourished with impressive examples including demonstrating cardiovascular stability during intermittent haemodialysis, diurnal variation in phosphate levels, and the development of adverse cardiovascular event prediction.

Brian Cuthbertson of Aberdeen presented his work on life after surviving intensive care. Data collected over 15 years was presented, and showed a higher mortality in the intensive care survivors to the general population with a higher rate of decline. Possible causes for this were explored including: age, residual organ damage and accelerated ageing process. Quality of life was often poor five years post discharge. The profound psychological morbidity was described and the ripple effect to the patient's carers who have a 30% incidence of depression. Prolonged neurocognitive dysfunction was also described. The challenge of reducing morbidity in this setting was set as an appetiser for the PRATICAL study.

Tim Walsh, first of the Edinburgh Professors, gave fresh insights into the perennial account of blood transfusion in critical care. The magnitude of critical care transfusion and its elective nature was presented. The 5% excess mortality of the liberal transfusion group in the TRICC study was deductively sought after and excluded infection, error, leucocytes, and TRALI as plausible causes. Licensed storage of packed cells presumes a 75% cell survival after 24 hours in the circulation and delegates were reminded that this reflected viability not functionality, and may hold the key to this puzzle. Future work will address this point (RELIVE, ABLE), but until this time conservative therapy especially in the young should remain in place.

Peter Andrews, second of the Edinburgh Professors, gave a bench to bedside account of practical neurosciences with the difficulties in addressing single factors in complex diseases and the evolution of imaging modalities which have yielded fantastic information only hitherto provided at post mortem. This lead to an overview of the current random controlled study EUROTHERM which is addressing mild





hypothermia in the management of traumatic brain injury to manage raised intracranial pressure.

To bring the session to a close, delegates were given a taste for the future, with plans to look at hypothermia in stroke management to extend the window for thrombolysis and the hope that new technologies will lead to the discovery of novel signalling pathways and their manipulation.

Tom Judge provided an engaging presentation on problem resolution in the workplace based on his extensive experience in setting up delivering a frontline aeromedical transfer service in Maine USA. He suggested that medicine had a long way to go to match the aviation industry, a similar high consequence endeavour in risk reduction. The difficulty in reducing human error was humorously delivered and requires a robust system of governance and operational planning tackling the institutional preconditions which lead to deficiencies, unsupported staff and the sudden losses of judgement. This was then placed in the context of the NHS governance framework and the priority of future safety planning which should be independent of other conditions.

The afternoon session entitled "Dealing with the aftermath" got underway with Steve Brett who set about describing the long term impact of critical illness. Memories of intensive care are created by a complex interaction of pain, physical limitation, anxiety, depression, stress, social isolation, cognitive impairment, poor concentration, on-going disease and perceived changes in health. These lead to physical, non physical (psychological, affective and Post Traumatic Shock Disorder (PTSD) and cognitive dysfunction. Delegates were then given a sneak preview of the new NICE guideline due to be published in March 2009. Key features included a patient focus evaluation of needs and an inclusion of family, with simple repeated patient assessments throughout their care pathway triggering more complete evaluations from allied health professionals.

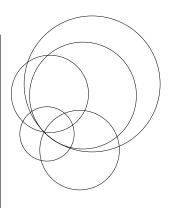
To follow, Brain Cuthbertson delivered the result of the PRACTICAL trial which randomised 286 ICU patient survivors to standard care or to a comprehensive package of nurse led care developed by a great team of expertise. Both groups were similar demographically, with similar severity scores and an ICU population which could be generalised. Primary endpoint was quality of life at six months, which was not statistically significant and there was no difference in mortality, satisfaction scores or work attainment. The reasons of this no effect study were then explored including whether the group was too broad or targeted the wrong group (did patients with severe PTSD avoid the clinic), but follow up clinics may need to be reconsidered. To conclude the session Alasdair Hull gave an in depth description of critical illness post traumatic reactions from the perspective of a psychologist. Intensive care patients are placed in an inescapable threat situation which leads to severe anxiety and PTSD among others. The importance for the Intensivist to know about because it occurs, has sequelae, limits quality of life and it is important to intervene with psycho-education. Common themes include flash backs to imagined events, survivor guilt, ripple effect and suspicions of inadequate medical care. Therapies include normalising, enabling catharsis, inspiring hope and a sense of safety, cognitive behavioural therapy, education and treating core symptoms.

Prizes were awarded to Conway Morris for his oral presentation on ventilator associated pneumonia and Malcolm Sim's poster on confusion matrices in predicting cardiovascular instability.

To bring the meeting to a close Alastair Lee, who set up the Scottish liver transplant service of Edinburgh, presented the state of the art on the management of acute liver failure, focusing on the holy grail of the subject: a fully functional bioartificial liver and the pitfalls encountered so far in the attempts to make it a reality. The more recent albumin dialysis may have to be reinvestigated after the realisation that bottled albumin has a stabiliser which is removed by the healthy liver. The manifestation of cerebral oedema was also described and role of ammonia and glutamine providing a time dependent osmotic load. Hypothermia is often used to control intra cranial pressure (ICP) and ammonia levels can be treated phenylacetylglutamine. The bottom line was that liver transplant saves lives with a 70% I year survival rate.

Simon MacAree, Glasgow

scottish critical care delivery group report





The Scottish Critical Care Delivery Group (SCCDG) continues to meet twice a year in August and March. There are several issues for the Group at present, particularly relating to pandemic flu, Critical Care workforce planning and HDU needs assessment and development.

Meeting with Chief Medical Officer October 2009

A delegation from the Group and President of SICS met with Harry Burns in October.

At this meeting we noted that much progress had been made across a range of issues raised at our previous Chief Medical Officer (CMO) meeting and thanked Dr Burns for his support in relation to the interhospital transport audit, transfer equipment and Medical Workforce planning. The SCCDG is effectively functioning as a national clinical network in all but name; Dr Burns acknowledged the value of the national strategy and planning work of the Group.

A subsequent paper presenting a case to the National Planning Forum for recognition of the SCCDG as a national planning and strategy network, as supported by Dr Burns, was approved.

Pandemic Flu

Our main energy over most of 2009 has been directed toward pandemic flu, with the group providing a co-ordinating national voice around Critical Care service provision in the areas of capacity and escalation planning, developing consistency in triage decisions. This has included managing the central allocation of extra ventilators. Recognition of the SCCDG as a network for advice to Scottish Government Health Department (SGHD) on flu, for rapid communication of issues to/from all regional clinical leads for critical care and for sharing expertise on planning and implementation of escalation and triage arrangements has been extremely positive.

At the time of writing the second wave seems to be on the way out - so far we have been left relatively mildly affected, but with a legacy of much more robust national plans to manage future large scale ICU escalation should this be required.

Our co-ordinated Scottish response has been recognised by Department of Health (DH) England flu planners who have sought to replicate several aspects across the Regional management structures in England.

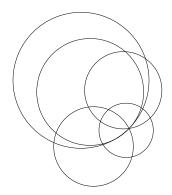
As a spin-off from this activity, the Group has also been centrally involved in the work on extra corporeal membrane oxygenation (ECMO) provision for Scottish patients in a working group ably chaired by Simon Mackenzie.

Medical Workforce Planning

The SCCDG has completed a report which has been fed into Dr Alastair Cook's overall workforce planning and to the Health Policy and Strategy Directorate. This comprehensive survey of medical workforce pressures across Scottish Critical Care highlighted specific pressures and sets out direction to explore a range of solutions. This report notes that, while cuts in trainee numbers may not require to be as drastic as first suggested, there will be several other pressures on sustaining service with conventional medical rotas.

Specialty Grade doctors are not available for rota gaps in the current job market and forthcoming CCT (certificate of completion of training) holders are unlikely to apply for this sort of post. We risk losing them overseas to more attractive career options.

Critical Care activities are increasing; there is increasing demand for specific critical care expertise into expanding High Dependency services and an expectation of service expansion John R Colvin Chair, Scottish Critical Care Delivery Group



into larger units and High Dependency Unit (HDU) care in the face of a decreased medical workforce. This is currently being managed by increased consultant out-of-hours work, development of non-medical roles and attempts to increase training from other specialties outside anaesthesia. This latter option is difficult in the face of increasing pressures on rotas from EWTD (European work time directive) and potential cuts in trainee numbers from Scottish Government Workforce Directorate across all specialties. The CMO agreed that increased critical care training for all acute specialties up to ST2 level should be sought- he agreed to follow this up through NHS education for Scotland (NES).

SCCDG members recognise the difficulty of maintaining cover and standards across a large number of intensive care units. The Group will contribute to further national dialogue on the future delivery arrangements for Critical Care to ensure that provision is truly equitable across Scotland in terms of access and standards of care

New (non-medical) role development The SCCDG almost unanimously recognises that, in the face of the pressures described above, this has become a necessity to sustain safe service delivery in the coming years. Principles agreed this year as part of the above workforce initiative include:

- Replaces some aspects of roles and responsibilities of only the most junior doctors in critical care
- Specifically not replacing need for senior trainee/consultant decision making and practical skills, particularly advanced airway skills.
- While different Intensive Care units envisage a range of ways to employ this support, there was a large element of commonality in the skill set required.
- Experienced critical care nurses with expanded roles (2 years training) are suitable for this. Physicians Assistants (Anaesthesia) do not have the training or experience to take on this role and should not be seen as a solution for Critical Care.
- Individual health boards are already developing this in isolation. Currently, programmes of training and recruitment of Advanced Critical Care Nurse Practitioners are underway in Lanarkshire and Lothian. More will follow. There are 2 separate training programmes being developed at 2 universities. In England, and others are also developing this model. We risk non-standard training with non-transferable qualifications. NES are aware but there has been no action to unify training so far.

All agree that there is an urgent need to standardise these developments on a national basis. This is being actively pursued though NES in addition to the several discreet ongoing regional initiatives.

Scottish Medical and Scientific Advisory Committee (SMASAC)

HDU report and needs assessment The SCCDG had agreed to a request from CMO to act as a central co-ordinating body on implementation of this report, particularly on standardising needs assessment. The Group agreed standardised methodology, based on Tayside model. The SCCDG agreed to produce an updated report to CMO by Spring 2010, Sandy Binning is leading this work.

John R Colvin Chair, Scottish Critical Care Delivery Group

treasurer's report

The Society's finances remain in a healthy position with the annual scientific meeting (ASM) being the main source of income. Charitable status was granted as of the 17th July 2009 and this confers significant benefits to the society. Along with these benefits come additional responsibilities and council have agreed to the employment of formal services to ensure compliance with accountancy regulations. The society is also due to pay corporation tax for the period covering April 2008 until the granting of charitable status and this is in hand with the accountants.

Insurance cover is now in place to provide some cover for the ASM as there is a potential significant financial loss to the society in the event of cancellation. 2010 will hopefully see the society implementing a direct debit system for the collection of subscriptions. This will help greatly with the management of membership subscription matters and can be coupled with the implementation of Gift Aid for subscriptions and other income. This will be of great benefit to the society as well as individual members who may be able to claim tax relief on their subscriptions.

Membership continues to grow and I would encourage you all to point non-members to the website where a membership form can be downloaded.

Rory MacKenzie Honorary Treasurer & Membership Secretary

secretary's report



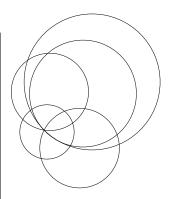
The SICS Council has increased in size following the creation of a new region and subsequent elections in 2008. In 2010 we will also see the appointment of an Associate member representative on Council.

This year has seen another change of venue for the Annual Scientific Meeting (ASM) to St Andrews. Despite the economic climate we have managed to keep the registration costs the same as the previous year which is currently promising to ensure a good mix of delegates. Preparations are in place for the Burns' Supper where we hope some delegates will be in fine voice on the night! I must acknowledge the invaluable help and support given to me and the Society by Mrs Kathleen Middleton who stepped in to assist with planning the ASM.

The SICS Travel Grant

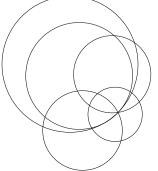
A total of up to £2000 is awarded in whole or part to one or more applicants who will be undergoing travel to study or experience critical care in another environment/location. The grant is accessible to SICS members of any profession and any grade. To apply send a summary (maximum length - one side of A4 only) of your proposed project and anticipated costs to the Secretary at the address below or by email. Applications will be considered at the SICS Council meetings which occur in the spring, autumn and prior to the ASM in January. Details are also on the website.

Dr Roxanna Bloomfield Honorary Secretary



Dr Roxanna Bloomfield Honorary Secretary





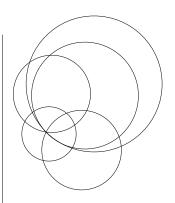
The Society was granted charitable status by the Office of the Scottish Charity Regulator (OSCR) during this financial year. The granting of charitable status provides the Society with a number of benefits as well as bringing with it increased responsibilities. The benefits include exemption from income tax and corporation tax (and, should the situation arise, capital gains tax) on income other than from trading arising outside our primary purpose (the advancement of education). This has become important for the Society because of the successes of our meetings throughout previous years. Our trading activities are such now that Her Majesty Customs and Excise (HMRC) have requested annual returns and are assessing our current tax liability. We can also now recover income tax deducted from deeds of covenant and receipts under gift aid so I would urge you to consider applying (forms available from HMRC) for a Gift Aid declaration form.

By becoming a charity, we have to operate within a particular legal and institutional framework. By accepting the tax benefits and public trust that comes with charitable status, we must now be publicly accountable. We are required to make information about our activities and funding available to the public and this is done through our annual returns to OSCR.

The trustees are the current Office bearers.

Steve Stott President Elect

scottish intensive society audit group (SICSAG)



The Scottish Intensive Care Society Audit Group has moved on significantly this year. A number of changes in personnel have occurred: Moranne MacGillivray has joined us as Quality Assurance Manager, and Angela's right hand woman, Jan Kerssens has departed and been replaced by Catriona Haddow as our Statistician. The Steering Group has undergone some changes. Our Emergency Medicine Colleagues Crawford McGuffie (Crosshouse) and Angus Cooper (Aberdeen) left the steering group. Gillian Adey (Aberdeen) has retired after many years service to the audit for which we thank her. Steve Stott (Aberdeen) and Kevin Holliday (Raigmore) joined the group.

The 2009 Annual Report on 2008 data was published in July. This reported activity, interventions and outcome on over 10,000 ICU and 20,000 HDU patients. Crude and case mix adjusted mortality continues to fall. No units were identified as outliers for mortality.

The educational aspects of SICSAG are vital for the quality of the audit and to help busy clinical staff gain the most from it. Angela and Moranne have made great efforts to make this successful and local and regional STAG (Scottish Trauma Audit Group) co-ordinators have been enormously helpful in this and data validation. A Nurse users' group is being set up to help develop this further.

Catriona and Moranne have produced monthly reports to all ICU's on activity, data quality and CUSUM charts of unit mortality.We have been learning how to use these in 2009 and will continue to develop them. Monthly HDU reports are planned for early 2010.

The SICSAG annual conference was amalgamated with the SICS Critical Care Trials and Evidence Based Medicine Groups for the first time in September. This was a successful venture which has brought closer ties between the audit, critical care research and the evidence base with which we work. We would hope to repeat this meeting in 2010.

The audit is now supplying data in support of 2 PhD's and an MD as well as multiple data requests from Scottish clinicians. We have collaborated with ICNARC (The Intensive Care National Audit & Research Centre) on a comparative study of outcomes in surgical patients admitted to ICU and look forward to Dr Ajith James' presentation of the results at the SICS ASM in January 2010.

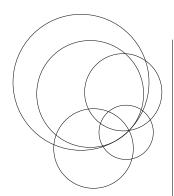
We continue collaboration with a number of other NHS agencies. The national HAI (healthcare associated infection) in ICU project with Health Protection Scotland is making excellent progress and only one unit has yet to start HAI surveillance and data collection. The Scottish Patient Safety Programme has been supported widely by the clinical staff in critical care in Scotland. Care Bundles are now part of our every day work and quality improvement is firmly fixed in what we do. We have just started assisting NICE (National Institute for Clinical Excellence) with audit of management of the open abdomen for development of standards of care.

HINI has been on all our minds this year. SICSAG has set up temporary ICU bed plans to help capture any activity which occurs with critical care escalation out of our current bed bases. We also helped to promote with the Trials Group the importance of collecting SWIFT data nationally.

As usual, I would like to thank all of the SICS membership for their support. We should also recognise that the developments and continued success of the audit are in huge part due to the efforts of Angela, Moranne, Catriona, Diana Beard as Project Manager and the steering group. I sincerely thank you all.

Further information, reports and contacts can be found at www.sicsag.scot.nhs.uk

Brian Cook Chairman SICSAG



scottish intensive care society education and training group

The group continues to develop whilst consolidating existing activities.

This report provides an update on what we have achieved and what is planned.

I. The Education area of SICS Website and core teaching materials

Mo Al Haddad has continued to be involved with this but Richard Appleton has assumed responsibility for running the website. To date the group have authored and developed eight on line tutorials, now live, with two more about to be completed. Material on clinical decision making and simulation applied to intensive care training is also available.

The on-line tutorials should be suitable for doctors coming through intensive care in their FY2, ACCS and early ST years. We hope that these resources are also useful to nursing, physiotherapy and pharmacy colleagues and to medical and nursing undergraduates.

Live at:

http://www.scottishintensivecare.org.uk/ education/icm%20induction/index.htm

- Initial assessment and management of the acutely ill patient
- Respiratory failure
- Ventilation
- Shock and vaso-active drugs
- Monitoring
- Nutrition
- Acute liver failure
- Neurological emergencies
- Sedation

Imminent: by the time you read this these should be completed.

- End of life care
- Toxicology in Intensive Care
- Acute renal failure: presentation and initial management
- Renal replacement therapy
- Sepsis

2. Intensive Care training and simulation

We have continued running courses (bi-monthly) in the Scottish Clinical Simulation Centre. These

are aimed at trainees attached to Intensive Care. These PICT courses (Principles of Intensive Care: Training) utilise the SAINT learning modules and are suitable for FY2, ACCS, ST1, ST2 trainees. Development of simulation based training for more advanced trainees is planned over the next year.

3. ICM Trainees in Scotland

This years Scottish Intensive Care Society Trainees educational meeting took place on the slightly later dates of the 4th and 5th of November at the Royal College of Physicians in Edinburgh. The new timing seemed to help in reducing (but not eliminating!) the now traditional last minute rush of applicants. It was also our first meeting in the more salubrious surroundings of Royal College of Physicians in Edinburgh which proved to be a good venue with the catering being as varied as the programme with Kangaroo burgers served on the first day!

Over 40 delegates attended each of the 2 days and enjoyed a varied programme of lectures and workshops including many high quality review presentations on core topics such as management of stroke, ventilatory modes, fluid management and cardiology for Intensivists. There were also very interesting and informative presentations on topics with which most of us were less familiar, including critical care in a war zone and the Lund approach to head injury. The group workshops encompassed a wide variety of topics including paediatric resuscitation, end of life care, teaching, ECMO and hyperbaric medicine. The meeting finished with a hard fought and eloquently presented debate by Drs Price (for) and Daniel (against) the motion asking whether selective decontamination of the gut should be practiced in all ICUs, Dr Price managing to convert many of the sceptics in the audience. The SICS trainees committee would like to thank all those who gave their time in preparing and presenting lectures and workshop as well as the staff of The Royal College of Physicians in Edinburgh for their assistance in helping to make this such a successful meeting.

4. Membership, office bearers and affiliations

Details are on the website.

Graham Nimmo and Gordon Houston for SICS Education and Training Group

scottish critical care trials group

This was an important year for the Scottish Critical Care Trials Group (SCCTG) because funding arrangements for clinical research in the United Kingdom are changing. As might be expected, Scotland is using a different model from England, but both systems offer opportunities for Critical Care research which have not been open to us before. We need to understand these changes and act together to make the most of them in order to build on the success and reputation we already have for delivering collaborative trials and studies in Scotland.

In England, research funding that was previously embedded in NHS Trusts was removed 2 years ago and is being returned to the system through the National Institute of Healthcare Research Clinical Research Networks (NIHR CRNs). There are 26 regions (Comprehensive Local Research Networks, CLRNs) covering the whole of England. Each of these has a large budget to organise research and deliver it in the region in collaboration with NHS organisations and Universities etc. The funding available each year is dependent in part on the numbers of patients recruited into research studies on the UK portfolio, incentivising research for the first time. One result has been that specialties previously overlooked for support, such as critical care, are receiving embedded funding for research nurses and supporting professional activities. This will increase recruitment to important trials, and could potentially support trials led from Scotland. Specialties such as Critical Care are represented nationally by a Specialty Group, to coordinate activities, try to unblock recruitment problems, and liaise with local CLRN groups and the national coordinating office to facilitate improved recruitment. As first Chair of this UK-wide group, I have seen a real injection of resource to critical care research, greater coordination of activities, more sites participating in research, and an increasing number of critical care studies and trials appearing on the portfolio. It is an exciting time.

In Scotland this model has not been used. Instead, the embedded research funding is being gradually withdrawn from the NHS Divisions. A major part is being re-invested in Academic Health Science Centres (AHSCs) in each of the major cities, which include funding for trial support, Clinical Governance, and staff to support NHS research, including research nurses. Over the next 12-18 months more funding is planned to be withdrawn and re-invested to more directly support those undertaking research in NHS Scotland.These processes are being conducted through Research and Development (R&D) departments at individual NHS Divisional level, so it is essential to engage with local R&D directors now to ensure Critical Care is part of this process.This is our opportunity to form the basis of a funded Scottish Critical Care Research Group.

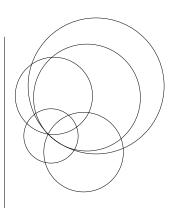
With this in mind the Constitution of the SCCTG was re-written in August/September, circulated to the membership, and approved at the SCCTG/ SICSAG meeting in September. In the new model we will have an expanded Executive Committee who will be responsible for leading research delivery in their SICS region. There will be up to three representatives from each of the SICS council regions, namely:

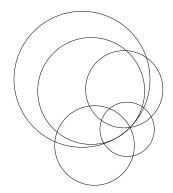
- I. NORTH: Highlands, Grampian, and Tayside.
- 2. EAST: Lothian, Borders and Fife.
- 3. WEST: Dumfries & Galloway, Ayrshire & Arran, Lanarkshire, and Forth Valley.
- 4. GREATER GLASGOW and CLYDE.

The minimum tenure of each member will be 3 years, and at the end of each 3 year tenure, a new nomination for each regional representative will be sought. Re-election of individuals will be possible and no set period of duty on the group is defined.

Any member of the Scottish Intensive Care Society can stand for election to the executive group. The coordination of nomination of each regional member will be the responsibility of the regional representatives for that region on the SICS council. The method used to identify and nominate the individual will be at the discretion of the individual regions. To ensure geographical representation across ICUs only one nomination will come from each ICU. The final composition of this group will be announced at the AGM in January 2010, and will meet regularly thereafter.

This model has been circulated to the Chief Scientist's Office, and to the Scottish R&D Directors, who are supportive of developing a National Critical Care Research Group in Scotland. To this end we have been successful in obtaining funding for embedded research nurses and a coordinator in Lothian through the AHSC funding, and similar developments are progressing in Glasgow. We need to push for similar commitments in all regions through local canvassing supported by the national group.





The best way to secure support will be to continue to deliver high quality research in Scottish Critical Care, either through Scottish led grants or supporting studies on the UK portfolio led from other parts of the UK. Recently completed major studies we successfully led include the SIGNET study (completed in 2009), FOCCUS (completed in 2009), and PRACTICAL (completed in 2008). Ongoing clinical studies led by Scottish Intensivists include TRAPPHIC (completing in 2009-10), RELIEVE (started in 2009), RECOVER (starting in 2010), EUROTHERM (started 2009), and GENISIS (started 2009). One goal for 2010 is improve the website to provide information about these studies and their progress to all SICS members, and increase the numbers of centres participating. Scotland also continues to support major UK studies such as OSCAR, BALTI II, SWIFT, FIRE and RAIN.

So many acronyms.....! If you want to know more about these studies I suggest you look at the NIHR critical care portfolio, as most are on it. Look at http://www.crncc.nihr.ac.uk and search for the critical care specialty group and portfolio. If you want a fuller description of the new system I wrote an article in JICS in the July 2009 issue. The Scottish system is evolving and I hope the new Executive Committee will lead us to further success in research in Scottish Critical Care. We are coming of age and the opportunities are great so please get involved. We are entering the era of large trials, which we will all need to support and which will not succeed unless many, if not all, ICUs take part!

Finally, in September Brian Cuthbertson left Scottish Critical Care for a new life in Toronto. Brian made an enormous contribution to Critical Care research in Scotland and the wider UK. He is a larger than life character with enormous energy and will be missed. I'm sure you join me in thanking him on behalf of the society and wishing him good luck.

If you want more information, please get in touch: twalsh@staffmail.ed.ac.uk

Tim Walsh

Chair, SCCTG Executive Committee Chair, NIHR CCRN Critical Care Specialty Group

transport issues

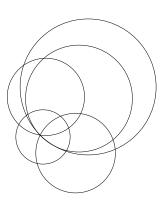
The past year has seen progress on a number of fronts pertaining to issues of inter-hospital transport:

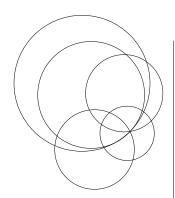
- The critical care trolley (CCT6P) has been purchased by most health boards in Scotland. That is excellent news since it means that this central piece of equipment is going to be standardised across Scotland resulting in improved training, familiarity and clinical governance.
- 2. The Scottish Ambulance Service (SAS) has given an undertaking that the CCT6P and accompanying personnel will be returned to their base hospitals after the delivery of the patient. Albeit at the risk of having to help out with an emergency should the ambulance be diverted on the return leg of the journey.
- Hopefully by the time you read this there will be a standard protocol for requesting a critical care transfer using the CCT6P. Enabling you to stabilise the patient on the trolley prior to the arrival of the ambulance crew whilst knowing when the transfer will occur, i.e. planning will be easier.
- 4. Again by the time you read this most SAS divisions will be able to offer "mid tier" ambulances for long distance transfers. These ambulances are "blue light" vehicles which have invertors. They are, therefore, able to provide a 240V domestic electric supply. Thus, saving the batteries on medical equipment.

- 5. The SAS is in the process of establishing a national inter-hospital transport coordination centre to be based at the West of Scotland Emergency Medical Dispatch Centre at Cardonald. This centre will eventually coordinate all IHT (Inter Hospital Transfer) requests, including all the retrieval teams and the air ambulance service. At long last the air and land desks are being reunited. This is great news!
- 6. IHT is currently a hot topic in government and health board circles. As a consequence discussions are taking place between healthcare planners, the SAS and the neonatal, paediatric, shock team and Emergency Medical Retrieval Service retrieval teams. Hopefully leading to a more integrated and efficient secondary transport system. If we have a fair wind, you never know we may even be able to establish an adult air retrieval team, which would greatly benefit all of us but in particular the remote, rural and island communities.

Mike Fried

SICS and RCA representative to the SAS IHT Board





scottish intensive care society evidence based medicine group

The last 12 months as seen both periods of change and consolidation for the EBM group. In previous years the group has co-hosted a summer meeting with the SICS trials group. This year we expanded the meeting and joined forces with SICSAG generating a larger meeting in Stirling with contributions from all three groups.

The EBM contribution was mainly in the form of CAT (Critically appraised Topics) presentations and an EBM breakout meeting. However, as usual EBM chat was useful in many parts of the meeting, even out with these core EBM elements. It was great to see so many trainees taking a lead in their sessions.

There was also a strong presence from the patient safety or quality improvement contingent from within ICU in Scotland with some excellent presentations and discussions. (Messrs Longmate, Rooney and Daniel). I hope that this becomes a permanent feature of the meeting.

The groups staple output of paper appraisals (CATS) continued. The main publication forum over the last 2 years has morphed into JICS, http://journal.ics.ac.uk (with follow up publication on the group's web site www.sicsebm.org.uk) this has increased the readership of the CATS. The journal can now be viewed on line at the above address. 2009 saw 15 CATS published with all but one originating from north of the border. This increase in CATS and the submission of two comprehensive reviews of SDD (Selective Decontamination of the Digestive tract) and outreach / METS by Richard Price have tested the editorial capacity of the group. It 2010 we will need to look to expand the editorial board (from one!) in order to cope with the increased number of submissions and improve the submission to web publication time.All notes of interest to chris.cairns2@nhs.net please.

Thanks to all those who either helped make the combined meeting a success or submitted work to the group this year. I look forward to an even more productive 1010.

Dr Chris Cairns Chair, SICS EBMG

scottish transplant group



Progress continues to implement the 2008 Task Force Report "Organs for Transplant" in Scotland.

In 2008 there were 72 deceased donors in Scotland, the highest number in the last decade, my initial impression are that the 2009 date will improve on these figures.

There is broad support within the critical care community for the aims of the report both in Scotland and within the UK as a whole.

Specific recommendations of the report were to establish a network of clinical leads for Organ Donation and to establish donation Committees at board level in Scotland. This has been achieved, and, not withstanding some uncertainty about their exact role, they are starting to meet regularly and support local practice.

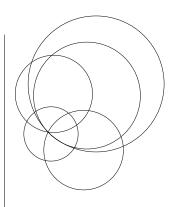
A committee to look at the outstanding legal and ethical issues has also been formed in Scotland with membership drawn from Intensive care, A&E Neurosurgery and Transplant communities as well as legal, ethical and policy support from the Scottish Government. This will liaise closely with the UK DEC Chaired by Professor Peter Simpson and hosted by the Academy of Royal Colleges which will meet for the first time in January 2010.

A successful one day meeting was hosted by the Scottish Government Health Directorate in May 2009 to address progress to date and some of the outstanding barriers to full implementation of the task force report. The meeting was addressed by the cabinet Secretary for Health. Approximately 150 invited delegates from clinical, managerial and government departments attended the meeting.

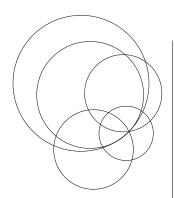
A number of media campaigns over the year have highlighted the importance to the public of making their wishes known and signing up to the Organ Donor Register (ODR). The most recent figures available show 33% of the Scottish population has signed the ODR. This contrasts with surveys showing greater than 90% of the population would accept a transplanted organ if necessary and over 85% would be prepared to donate.

Data is now collected from Ward Watcher on a monthly basis looking at the circumstances of all deaths in ICU and whether organ donation would or should have been explored. I cannot stress how important it is that we participate fully with this audit to provide clinical intelligence and ensure that the conclusions derived are accurate. The results of this potential donor audit are sent to Board Chief Executives and Donation Committees. It is probable that the potential donor audit will be extended in 2010 to look at deaths in the Emergency Department.

Stephen Cole



Stephen Cole Chair, Transplant Liaison Group



scottish intensive care society nutrition group

The Scottish Intensive Care Society

Nutrition Network was formed in 2006 after a survey showed a wide variation in nutritional practices throughout Scotland. The group, chaired by Marcia McDougall from Queen Margaret Hospital, now has an email circulation list of over 70 people, including Intensivists, Pharmacists, Surgeons, Nurses, Nutrition Nurses and Biochemists. It meets three times per year and is this year employing video-conferencing.

The group aims to promote discussion of nutritional issues affecting critical care and high dependency patients, to encourage audit and research, and to publicise national and international guidelines. Initiatives this year include writing 'best practice statements' on practical topics such as adding water to feeds, nasal bridles, starting and stopping feeds and commonly used weights (i.e. ideal, actual, lean and adjusted).

Craig Hurnauth, Nutrition Nurse at SGH, has completed an audit of weighing in Scottish ICUs, which will be presented as a poster at the SICS meeting in January. This shows that we are very poor at obtaining patients' weights and that this is affecting our ability to screen patients for nutritional status in ICU. Craig has also looked into various different weighing methods and has highlighted that digital bed scales are effective, minimally labour intensive and relatively inexpensive.

Kerry Aitken, Paula Cummins and Marcia McDougall have developed an ICU nutritional screening tool and have piloted it in Fife. Kerry, Marcia and Peter Andrews are doing a systematic review of nutritional screening in ICU and hope to follow this up with a large epidemiological study. Many of our members were involved with the successful SIGNET trial and we hope to use this base of experience to run further research into ICU nutrition in the future. The profile of the group was raised by a presentation at the national BAPEN conference in Cardiff, and Marcia has given various talks in the UK about critical care nutrition. There has been considerable activity in Dundee with the purchase of weigh beds and introduction of nutritional protocols. Input from Aberdeen, Lanarkshire, Forth Valley, Inverness, Edinburgh and Glasgow teams has been welcomed and we now have representation from paediatric dietitians at Yorkhill. We eventually hope to have members from all Scottish units.

The Nutrition Network has a website attached to the SICS site where information about the group, protocols and links to guidelines may be found. There is also a teaching presentation and a Nutrition module on the adjacent educational site.

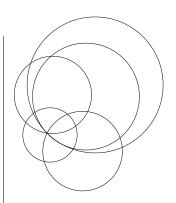
A plan for 2010 is to introduce a bulletin listing relevant nutritional papers which will be distributed around the group; this is being coordinated by Alan Timmins from Fife. We are also planning two educational meetings on nutritional issues in surgical and critically ill patients: the first is on Wednesday 10th February in Bridge of Allan and the second on Wednesday 9th June in Stirling – fliers and invitations will be available shortly.

For further information about these meetings and the group lease contact:

marcia.mcdougall@nhs.net

Marcia McDougall Chair, Nutrition Group

scottish intensive care society trainees report 2007-2008



Last years audit on the use of activated protein C in Scotland is now complete and was presented to the SICSAG meeting in September. Posters of the audit are being presented at the ICS state of the art meeting in London and the SCCM in Miami. The full paper is currently being edited.

The audit that was proposed and accepted this year by the SICS trainee group and the SICSAG Steering group was a service evaluation of the impact of alcohol on acute ICU admissions. The audit is looking at whether the ICU admission was directly related to alcohol either by acute intoxication or secondary to chronic alcohol related disease (predefined), whether alcohol played an indirect influence and finally whether there is any documented evidence of alcohol related co-morbidity not related to the acute admission. The first part of data collection is now complete and follow up data will be completed by January.

Dr Sarah Ramsay (Western Infirmary, Glasgow) is the audit consultant lead.

Educational Meeting

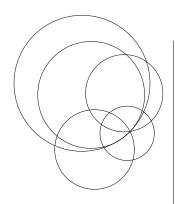
The educational meeting was held at a new time this year in November to make it easier for trainees to get leave and avoid being too close to the SICSAG meeting. We also had a new venue at the Royal College of Physicians in Edinburgh. The changes were well received and feedback was positive. The plan is for the meeting to continue at its later time in the calendar.

Web Design

Plans for a web based database of Scottish trainee audits in ICU are underway. Our aim is to start uploading them in January. Trainee audits done in Scotland will be entered into the database with the following information: dates completed, participating hospitals and a quick "start up" synopsis. This will facilitate closing audit loops at a later date. This synopsis will also enable the experience gained in problem solving when setting up an audit to be shared with colleagues and available for future reference.

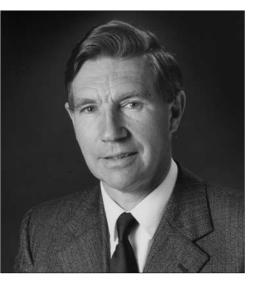
We hope this year's poster presentations at the SICS AGM will provide a core of audits to build upon in the future.

Alex Puxty Chair, Trainee Group



introduction to the mike telfer memorial lecture





This year the SICS has inaugurated the Mike Telfer Lecture. Mike will be well known to most of the senior members of the Society, as he had a pivotal role not only in the development of intensive care within Scotland but also within the UK.

Mike Telfer was a graduate of Glasgow University in 1957, trained in Anaesthesia in Glasgow and did his National Service in Germany. When he became a Consultant at Glasgow Royal Infirmary in 1963, the specialty of intensive care was in its infancy. By obtaining a few surgical beds he set up an initial four bed Intensive Care Unit in a Surgical Ward with his colleagues Donald Campbell and John Reid. Following this he had nearly 30 years as Consultant in anaesthesia and intensive care in which his enthusiasm and drive played a major role in establishing the specialty.

He was a total enthusiast and was renowned for his encouragement of the trainees. He led by example and was more than happy to roll his sleeves up and get involved in patient care at any time of the day or night. For many of us the real challenge was to persuade him that his immediate presence to manage a new admission at 4am was not always required. The only successful way to deal with his comment on the phone that he was not coming in was to put the kettle on to make him a coffee. The average time from this statement to his arrival in the unit was 15 minutes!

He had a clear understanding of the potential for computers to improve record keeping, and he spent many hours personally typing results into primitive computers. This led to a realisation of the potential for scoring systems and as a result he enrolled Glasgow Royal Infirmary as one of the sites for the UK APACHE study. He had a passion for making and fixing things and he took great pride in the mobile trolley (MICU) which he designed to move critically ill patients around the hospital. His enthusiasm for the latest bit of kit also led to the unit ultimately owning and using a bewildering variety of ventilators which only he seemed to understand.

In addition to his role in developing Intensive Care at Glasgow Royal, he also recognized the value in collaboration between intensive care units. This ultimately led to the establishment of the Scottish Intensive Care Society (SICS) and the development of a clear identity for Scottish Intensive Care.

He was the first President of SICS, a society that now provided a forum for education, research and social gathering of intensive care practitioners within Scotland. He had the vision to see the potential of such a collaboration - the first and lasting development being that of the SICS national audit.

From the initial small meetings of a few enthusiasts this society has gone from strength to strength, and we owe Mike Telfer a huge debt of gratitude for his enthusiasm and vision that got the society established. It is to his credit that the original vision and constitution of the society has needed little amendment since it was founded. He also became the Chairman of the UK Intensive Care Society recognizing his role in establishing the specialty at a national level.

He retired in 1992, after 29 years in the post of Consultant in Anaesthesia and Intensive Care at Glasgow Royal Infirmary. In retirement his enthusiasm was in no way diminished, and he developed a number of new skills including furniture making. Mike sadly died in 2007.

His legacy is the robust state of Critical Care in Scotland and the many trainees that were taught by him that still retain his passion and enthusiasm for Critical Care and try to live up to his high standards.

John Kinsella

The Scottish Intensive Care Society

Office Bearers

| Treasurer | Rory Mackenzie |
|------------------------------------|--------------------|
| Hon Sec | Roxanna Bloomfield |
| President | Simon Mackenzie |
| President Elect | Steve Stott |
| Ex officio | |
| Transplant Liaison Group | Steve Cole |
| Critical Care Trials Group | Tim Walsh |
| Interhospital Transfer | Mike Fried |
| Website | Mo Al-Haddad |
| Trainees' Representative | Alex Puxty |
| SICSAG | Brian Cook |
| Annual Report and Newsletter | Charlotte Gilhooly |
| Evidence Based Medicine Group | Chris Cairns |
| Critical Care Delivery Group Chair | John Colvin |
| Education Group | Graham Nimmo |

Regional Representatives

Greater Glasgow and Clyde

- Charlotte Gilhooly
- Alan Davidson
- Sarah Ramsay

East

- Sam Moultrie
- David Cameron
- Charles Wallis

North

John Colvin

Roxanna Bloomfield

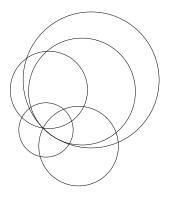
Jonathan Whiteside

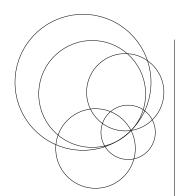
West

Martyn Hawkins

Willis Peel

Rory Mackenzie





The Scottish Intensive Care Society (continued)

Terms of Office

| Office Bearers | Position | Start | End |
|--------------------|-----------------|--------------|---------------|
| Simon Mackenzie | President | Jan 2008 | Jan 2010 |
| | Ex president | Jan 2010 | Jan 2011 |
| Steve Stott | President elect | Jan 2009 | Jan 2010 |
| | President | Jan 2010 | Jan 2012 |
| | Ex president | Jan 2012 | Jan 2013 |
| Rory Mackenzie | Treasurer | Jan/Apr 2009 | Jan /Apr 2012 |
| Roxanna Bloomfield | Hon sec | Jan 2009 | Jan 2012 |

| Regional Representatives | Region | Start | End/reelect |
|--------------------------|--------|----------|-------------|
| Charlotte Gilhooly | GGC | Jan 2006 | End 2010 |
| Sarah Ramsay | GGC | Jan 2009 | Jan 2011 |
| Alan Davidson | GGC | Jan 2009 | Jan 2011 |
| David Cameron | East | Jan 2009 | Jan 2011 |
| Charles Wallis | East | Jan 2010 | Jan 2012 |
| Sam Moultrie | East | Jan 2009 | Jan 2011 |
| John Colvin | North | Jan 2009 | Jan 2011 |
| Jonathan Whiteside | North | Jan 2009 | Jan 2011 |
| Roxanna Bloomfield | North | Jan 2007 | End 2011 |
| Rory MacKenzie | West | Jan 2009 | Jan 2011 |
| Martyn Hawkins | West | Jan 2009 | Jan 201 I |
| Willis Peel | West | Jan 2009 | Jan 201 I |



The Scottish Intensive Care Society

A Charity registered in Scotland OSCR number: SC040669

Secretary: Dr Roxanna Bloomfield, Department of Anaesthesia & Intensive Care
DETAILS DETAILS DETAILS

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